

Balancing Chemical Equations

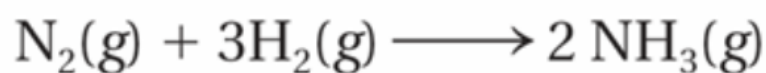
The calculation of quantities in chemical reactions is a subject of chemistry called **stoichiometry**.

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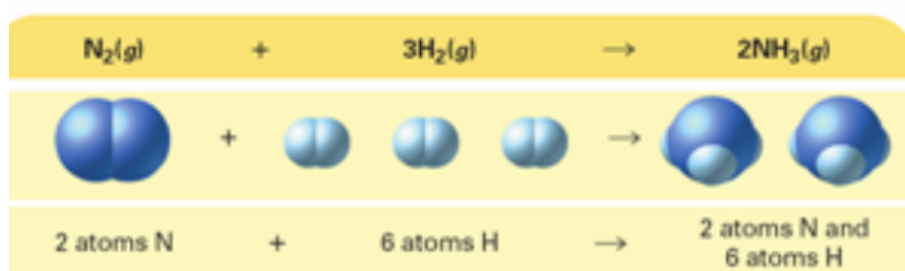
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A balanced chemical equation can be interpreted in terms of different quantities, including numbers of atoms, molecules, or moles; mass; and volume.



of Atoms





Mass and atoms are conserved in every chemical reaction.

Chemical reactions occur because:

- Atoms or ions collide causing a rearrangement
- A certain amount of energy is provided or exists
- The particles are oriented in such a way that successful rearrangement occurs
- A chemical equation shows the end result of the chemical reaction
- **REACTANTS** → **PRODUCTS**

When balancing equations the following must ALWAYS happen:

- Total number
- Of atoms or
- ions in the
- reactants

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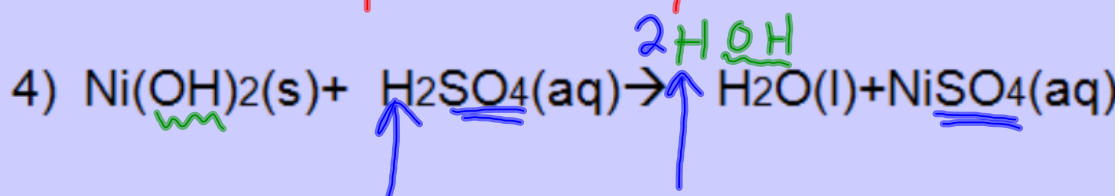
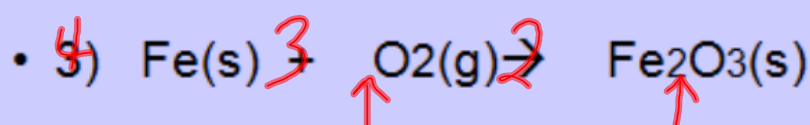
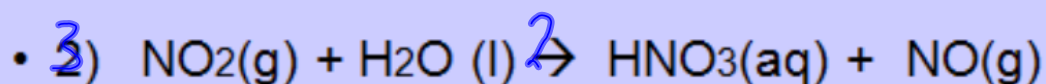
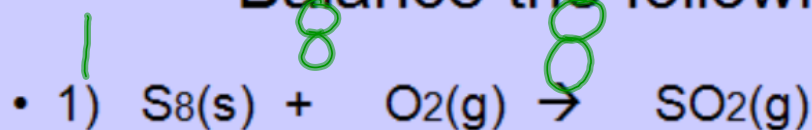
total number
of atoms or
ions in the
products

- Coefficients-are numbers placed in front of formulas to help balance an equation. Coefficients commonly represent the number of moles of the substances reacting or being produced.

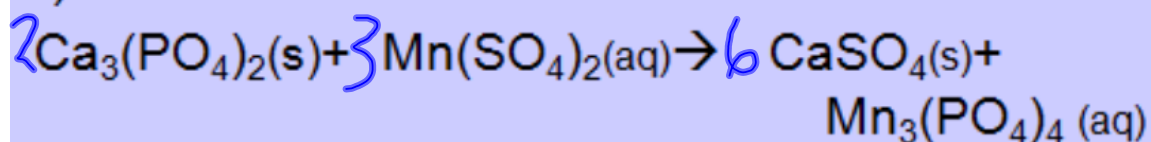
Balancing Equations: “Hints”

- ➡ ONLY Coefficients are used to balance chemical equations.
- ➡ Do not alter the original formulas that are given. Subscripts are part of these original formulas.
- ➡ Polyatomic ions can sometimes be balanced as a group.
- ➡ Combustion reactions that need a decimal or a fraction in front of the oxygen can be balanced by doubling everything.

Balance the following:



5)



6)



7)

